

<p>91-231894/32 A23 B07 C03 D16 (A92 A96 D22) SHOW 29.01.90 *EP -440-165-A</p> <p>SHOWA DENKO KK 29.01.90-JP-018502 (07.08.91) C08g-63/06 C12p-07/62 C12r-01/05</p> <p>New biodegradable microbial polyester copolymers - contg. 3-hydroxy-butyrate, 3-hydroxy-valerate, 3 hydroxy-propionate and 5-hydroxy-valerate units C91-100826 R(AT BE DE DK FR GB IT NL)</p>	A(5-E2, 9-A) BC(4-C3D) D(5-C, 9-C5)
<p>New random copolymers (I) have a wt.-av. mol wt. (Mw) of 10,000-2,500,000 and comprise 50-97 mole % 3-hydroxybutyrate (3HB) units, 1-25 mole % 3-hydroxyvalerate (3HV) units, 1-15 mole % 3-hydroxypropionate (3HP) and 1-10 mole % 5-hydroxyvalerate (5HV) units.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> $\text{-OCHCH}_2\text{CO-}$ CH_3 (3HB) </div> <div style="text-align: center;"> $\text{-OCHCH}_2\text{CO-}$ CH_2CH_3 (3HV) </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> $\text{-OCH}_2\text{CH}_2\text{CO-}$ (3HP) </div> <div style="text-align: center;"> $\text{-OCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CO-}$ (5HV) </div> </div>	<p>USE/ADVANTAGE</p> <p>(I) are biodegradable and biocompatible polymers with lower crystallinity and better moulding properties than poly-3-hydroxybutyrate, e.g. with satisfactory flexibility, m.pts. of 120-130°C and sufficient thermal stability to allow heat sterilisation.</p> <p>They may be used in the mfr. of biomedical materials (e.g. sutures and bone-setting materials), slow-release pharmaceutical and agricultural compsns., sanitary articles, diapers, fishing nets, packaging etc.</p> <p>PREPARATION</p> <p>(I) are produced by culturing a microorganism (esp. an <i>Alcaligenes</i> sp.) under N and/or P limitation in the presence of δ-valerolactone (DVL), 1,5-pentenediol or a mono- or dicarboxylate ester of 1,5-pentenediol, pref. at 20-40°C and pH 6-10.</p> <p>EXAMPLE</p> <p><i>A. eutrophus</i> ATCC 17699 was cultured in 2000 ml of a medium contg. 4 g/l $(\text{NH}_4)_2\text{SO}_4$, 8 g/l K_2HPO_4, 1.2</p> <p style="text-align: right;">EP-440165-A+</p>

<p>g/l KH_2PO_4, 0.5 g/l NaCl, 2.4 g/l MgSO_4, 20 ml/l mineral salt soln. and 10 g/l fructose at 30-35°C and pH 7-8 for 20hr. After adding 110 g/l DVL, cultivation was continued for 60hr.</p> <p>The broth was centrifuged and the pellet dried to give 69 g/l of dry cells contg. 33% of a copolymer (Mw = 420,000) contg. 92% 3HB, 2% 3HV, 5% 3HP and 1% 5HV units. (15pp367DAHDwgNo0/0).</p> <p>(E) ISR: No Search Report</p>	<p style="text-align: right;">EP-440165-A</p>
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